ANBCA2

ANALYTICAL BIOCHEMISTRY

An International Journal of Analytical and Preparative Methods

EDITORIAL COMMITTEE

N. O. KAPLAN, *Co-Chairman* W. D. McELROY, *Co-Chairman*

EXECUTIVE EDITORS

J. N. ABELSON
S. L. BERGER
L. BRAND
P. BRODELIUS
W. DE JONG
M. DeLUCA
J. E. DIXON
T. FRIEDMANN
O. GABRIEL
W. F. HARRINGTON
T. E. HUGLI
W. B. JAKOBY
M. D. KAMEN
J. H. LAW
Y. C. LEE
W. M. LOVENBERG
O. H. LOWRY
K. MOSBACH
W. D. PHILLIPS
J. F. RIORDAN
E. ROZENGURT
J. E. SEEGMILLER
B. L. VALLEE
H. VAN VUNAKIS

W. S. ALLISON, *Assistant to Co-Chairmen*

FOUNDING EDITOR

ALVIN NASON

Volume 151, 1985

ACADEMIC PRESS, INC.

(Harcourt Brace Jovanovich, Publishers)

San Diego Orlando New York Austin London
Montreal Sydney Tokyo Toronto

Copyright © 1985 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U. S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1985 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0003-2697/85 $3.00

MADE IN THE UNITED STATES OF AMERICA

CONTENTS OF VOLUME 151

NUMBER 1, NOVEMBER 15, 1985

Purification of Vitamin D-Dependent 28,000-M_r Calcium-Binding Protein from Bovine Cerebellum and Kidney by Calcium-Dependent Elution from DEAE-Cellulose DE-52 Column Chromatography
Kei Maruyama, Ken Ebisawa, and Yoshiaki Nonomura 1

Chromogenic Substrate Autography: A Method for Detection, Characterization, and Quantitative Measurement of Serine Proteases after Sodium Dodecyl Sulfate–Polyacrylamide Gel Electrophoresis or Isoelectric Focusing in Polyacrylamide Gels
Oswald F. Wagner, Ingrid Bergmann, and Bernd R. Binder 7

Quantitative Detection of Orthophosphate in Polyacrylamide Gels
Alexander Baykov and Sergej Volk 13

Rapid Electrotransfer of Proteins from Polyacrylamide Gel to Nitrocellulose Membrane Using Surface-Conductive Glass as Anode
Michal Svoboda, Sylvain Meuris, Claude Robyn, and Jean Christophe 16

A pH-Metrical Method of Determining Glucose-6-phosphatase Activity
Marat B. Murataliev and Evgeni N. Vulfson 24

Fluorometric Determination of Gizzerosine, a Histamine H_2-Receptor Agonist Discovered in Feedstuffs, Employing High-Performance Liquid Chromatography
Yoshinori Ito, Tadashi Noguchi, and Hiroshi Naito 28

A Simple and Reliable Assay for Glycoprotein-Processing Glycosidases
Tadeusz Szumilo and Alan D. Elbein 32

Assay of Proteoglycan Populations Using Agarose–Polyacrylamide Gel Electrophoresis
Dick Heinegård, Yngve Sommarin, Erik Hedbom, Jörgen Wieslander, and Bengt Larsson 41

A Sodium Dodecyl Sulfate–Gradient Gel Electrophoresis System That Separates Polypeptides in the Molecular Weight Range of 1500 to 100,000
Dagmar Bothe, Marianne Simonis, and Hans von Döhren 49

A $^{14}CO_2$ Ratios Method for Detecting Pyruvate Carboxylation
Joanne K. Kelleher and Blackshear M. Bryan III 55

Luminometric Determination of Oxidase Activity in Peroxisomal Fractions of Rat Liver: Glycolate Oxidase *Claudia Leupold, Alfred Völkl, and H. Dariush Fahimi* 63

Solid-Phase Purification and Analysis of Dicarboxylic Porphyrins Extracted from Cultured Tumor Cells *Greta M. Garbo, James B. Kramer, Rick W. Keck, Steven H. Selman, and Martha Kreimer-Birnbaum* 70

Reaction Products Formed after Strong Acid Treatment of α-Amino-δ-hydroxyvaleric Acid
Lola Cohen-Solal, Yves Blouquit, Michel Cohen-Solal, and Melvin J. Glimcher 82

Separation by High-Performance Liquid Chromatography of (3*R*)- and (3*S*)-β-Leucine as Diastereomeric Derivatives
D. John Aberhart, Jacques-Alain Cotting, and Horng-Jau Lin 88

Identification of Human Alcohol Dehydrogenase Isozymes by Disc Polyacrylamide Gel Electrophoresis in 7 M Urea
Wing Ming Keung, Charles C. Ditlow, and Bert L. Vallee 92

Alloaffinity Filtration: A General Approach to the Purification of Dynein and Dynein-like Molecules *Anthony Nasr and Peter Satir* 97

Increased Inhibitory Potency of Free Fatty Acid-Poor Albumin on the Release and

Activity of Insulin-Degrading Enzymes from Isolated Rat Adipocytes and Hepatocytes *Ole Sonne* 10
Counting Cells as DNA: Estimation of Ovine Pituitary Cells on Sephadex Columns *Mary G. Metcalf* 11
Concentration of Bronchoalveolar Lavage Fluid by Ultrafiltration: Evidence of Differential Protein Loss and Functional Inactivation of Proteinase Inhibitors *S. C. Afford, R. A. Stockley, J. A. Kramps, J. H. Dijkman, and D. Burnett* 12
Redox Changes in Coenzyme Q in the Millisecond Time Range: An Approach Using Rapid Quenching and High-Performance Liquid Chromatography *Ah-Lim Tsai, Robert Kauten, and Graham Palmer* 13
Separation of Bacterial Luciferase from Oxidoreductases by Affinity Chromatography *TenLin S. Tsai* 13
An Ultra Rapid and Sensitive High-Performance Liquid Chromatographic Method for Determination of Tissue and Plasma Free Amino Acids *Theodor A. Graser, Herbert G. Godel, Sabine Albers, Peter Földi, and Peter Fürst* 14
Competitive Binding Assay for Drugs That Interfere with Calmodulin Function *Harry Le Vine III, Naji Sahyoun, and Pedro Cuatrecasas* 15
Quantitation of Vitamin B_6 in Biological Samples by Isotope Dilution Mass Spectrometry *D. L. Hachey, S. P. Coburn, L. T. Brown, W. F. Erbelding, B. DeMark, and P. D. Klein* 15
A Method for Purifying the Platelet Membrane Glycoprotein IIb–IIIa Complex *Laurence A. Fitzgerald, Betty Leung, and David R. Phillips* 16
A Fluorometric Assay for the Biotin–Avidin Interaction Based on Displacement of the Fluorescent Probe 2-Anilinonaphthalene-6-sulfonic Acid *Donald M. Mock, Gary Langford, Dwight Dubois, Nick Criscimagna, and Paul Horowitz* 17
High-Performance Liquid Chromatography of Water-Soluble Choline Metabolites *Mordechai Liscovitch, Andrew Freese, Jan K. Blusztajn, and Richard J. Wurtman* 18
Methods for Enzymatic and Colorimetric Determinations of D-Erythrulose (D-Tetrulose) *Kiyoka Morii, Saburo Hosomi, Tomoyuki Terada, and Tadashi Mizoguchi* 18
A Direct Antigen-Binding Assay to Screen Hybridoma Supernatants *M. R. Suresh and C. Milstein* 19
Determination of Absorption Coefficients of Purified Proteins by Conventional Ultraviolet Spectrophotometry and Chromatography Combined with Multiwavelength Detection *Jack van Iersel, Johannes Frank Jzn, and Johannis A. Duine* 19
Enhanced Chemiluminescent Method for the Detection of DNA Dot-Hybridization Assays *Jayne A. Matthews, Armaiti Batki, Catherine Hynds, and Larry J. Kricka* 20

NUMBER 2, DECEMBER 1985

Improved Hybridization Assays Employing Tailed Oligonucleotide Probes: A Direct Comparison with 5′-End-Labeled Oligonucleotide Probes and Nick-Translated Plasmid Probes *Mark L. Collins and William R. Hunsaker* 211
Cleavage at Acyl–Proline Bonds with Sodium in Liquid Ammonia: Application with Nanomolar Amounts of Peptides and Separation of Products by High-Performance Liquid Chromatography for Structural Analysis *John Hempel and Hans Jörnvall* 225
Use of Swinbourne Plots to Study Potential Suicide Substrates: Effects of ATP and ADP on Yeast Mitochondrial F_1-ATPase *W. Terry Jenkins* 231

Effect of Antibodies to Glucose Oxidase in the Apoenzyme Reactivation Immunoassay System *David L. Morris* 235
Stabilization and Gas Chromatographic Analysis of the Four Stereoisomers of 1,2,2-Trimethylpropyl Methylphosphonofluoridate (Soman) in Rat Blood *Hendrik P. Benschop, Eric C. Bijleveld, Matthijs F. Otto, Carla E. A. M. Degenhardt, Herman P. M. Van Helden, and Leo P. A. De Jong* 242
Application of the Median Method to the Determination of Kinetic Constants for Competitive Enzyme Inhibition *John S. Althaus and David L. Martin* 254
Method of Enzymatic Determination of Pyrroloquinoline Quinone *Minoru Ameyama, Masatsugu Nonobe, Emiko Shinagawa, Kazunobu Matsushita, and Osao Adachi* 263
Reversible Covalent Immobilization of Ligands and Proteins on Polyacrylamide Gels *Ronald L. Schnaar, Barbara G. Langer, and Brian K. Brandley* 268
A Continuous Spectrophotometric Assay for Pyrimidine-5′-nucleotidase *Charles R. Zerez and Kouichi R. Tanaka* 282
Assay of Mephenytoin Metabolism in Human Liver Microsomes by High-Performance Liquid Chromatography *U. Thomas Meier, Thomas Kronbach, and Urs A. Meyer* 286
Quantitative Methodology for Corticosteroids Based on Chemical Oxidation to Electrophilic Products for Electron Capture–Negative Chemical Ionization Using Capillary Gas Chromatography–Mass Spectrometry. I. Assessment of Feasibility in the Analysis of Horse Urine for Dexamethasone *G. R. Her and J. T. Watson* 292
Measurement of Dimethylglycine in Biological Fluids *David H. Porter, Marie Lin, and Conrad Wagner* 299
Detection of Glycosaminoglycans at the One-Nanogram Level by ^{125}I-Cytochrome *c* *Phyllis M. Sampson, Ralph Heimer, and Alfred P. Fishman* 304
Lowry Protein Determination by Automated Flow Injection Analysis for Bovine Serum Albumin and Hepatitis B Surface Antigen *Ronald A. Salerno, Cathy Odell, Nancy Cyanovich, Bernard P. Bubnis, Wayne Morges, and Alan Gray* 309
Fucosterol Epoxide Lyase of Insects: Synthesis of Labeled Substrates and Development of a Partition Assay *Glenn D. Prestwich, Michael Angelastro, Angelo De Palma, and Margery A. Perino* 315
A Spectrophotometric Method for Quantitation of Carboxyl Group Modification of Proteins Using Woodward's Reagent K *Uma Sinha and John M. Brewer* 327
Plate Assay for Determining the Time of Production of Protease, Cellulase, and Pectinases by Germinating Fungal Spores *Ann E. Hagerman, Deborah M. Blau, and Andrea L. McClure* 334
Analysis of Oxidized and Reduced Pyridine Dinucleotides in Rat Liver by High-Performance Liquid Chromatography *Thomas F. Kalhorn, Kenneth E. Thummel, Sidney D. Nelson, and John T. Slattery* 343
Radioiodination of a Photoactivatable Heterobifunctional Reagent *Inhae Ji, Jaekyoon Shin, and Tae H. Ji* 348
High-Performance Liquid Chromatography of Glucagon and Related Compounds *Giorgio Mazzola, Renato Longhi, and Giacomo Carrea* 350
Direct Plasma Injection Method for the Analysis of Tryptophan Metabolites by High-Performance Liquid Chromatography Coupled with Precolumn Deproteinization *Ikue Morita, Tsutomu Masujima, Hisanobu Yoshida, and Hideo Imai* 358
Acetaldehyde: Its "Disappearance" from Human Blood *J. L. Nagy, L. Leisztner, and P. V. Véghelyi* 365

Mechanism of Dye Response and Interference in the Bradford Protein Assay
Steve J. Compton and Clive G. Jones 36
Characterization of Phosphohydrolase Activity in Bovine Spleen Extracts: Identification of a Bis(*p*-nitrophenyl)phosphate-Hydrolyzing Activity (Phosphodiesterase IV) Which Also Acts on Adenosine Triphosphate *Dennis M. Hawley, M. Z. Hodes, Margaret Crisp, Golda Ellis, Robert C. Karn, and M. E. Hodes* 37
Analysis of *n*-Hexane, 2-Hexanone, 2,5-Hexanedione, and Related Chemicals by Capillary Gas Chromatography and High-Performance Liquid Chromatography
Amin A. Nomeir and Mohamed B. Abou-Donia 381
Use of Different Hapten–Protein Conjugates Immobilized on Nitrocellulose to Screen Monoclonal Antibodies to Abscisic Acid
Stephen A. Quarrie and Giovanni Galfre 389
A Micro-technique for Preparing Homogenates of Biological Samples
Roy A. Murray and Michael G. Solomon 400
A Specific Method for the Determination of Soluble Sugars in Plant Extracts Using Enzymatic Analysis and Its Application to the Sugar Content of Developing Pear Fruit Buds *Christine A. Blunden and Michael F. Wilson* 403
Molar Absorptivities of Bovine Retina Rod Outer Segment Phospholipids in *n*-Hexane
C. N. N'Soukpoé-Kossi, C. Salesse, R. M. Leblanc, and F. Boucher 409
Picomole Analysis of Glutathione, Glutathione Disulfide, Glutathione *S*-Sulfonate, and Cysteine *S*-Sulfonate by High-Performance Liquid Chromatography
Douglas A. Keller and Daniel B. Menzel 418
Fractionation of Membrane Proteins on Immobilized Lectins by High-Performance Liquid Affinity Chromatography
D. Renauer, F. Oesch, J. Kinkel, K. K. Unger, and R. J. Wieser 424
Anomalous Liquid Scintillation Counting of Chromium-51
A. Charig, J. Blake-Haskins, and E. Eigen 428
Preparative Purification of *Escherichia coli* Heat-Stable Enterotoxin
Abdul M. K. Saeed and Richard N. Greenberg 431
A High-Capacity Hydrophobic Adsorbent for Human Serum Albumin
Makonnen Belew, Elbert A. Peterson, and Jerker Porath 438
Recombinant DNA Techniques: Storage and Screening of cDNA Libraries with Large Numbers of Individual Colonies from Initial Transformations
G. Vogeli, E. Horn, M. Laurent, and P. Nath 442
Methods of Extraction and High-Performance Liquid Chromatographic Analysis of Butylated Hydroxytoluene from the Tissues and Serum of Rats
Junji Terao, Robert A. Magarian, Gemma Brueggemann, and M. Margaret King 445
Preparative Immobiline Isoelectric Focusing of Plasma Apolipoproteins on Vertical Slab Gels *Karl H. Weisgraber, Yvonne M. Newhouse, Jana L. Seymour, Stanley C. Rall, Jr., and Robert W. Mahley* 455
Quantitation of Zinc in Nitric Acid-Digested Plasma by Atomic Absorption Spectrophotometry *Richard B. Passey, Karen C. Maluf, and Robert Fuller* 462
Silver Staining of Proteins in Polyacrylamide Gels: Increased Sensitivity through a Combined Coomassie Blue–Silver Stain Procedure
Miriam R. de Moreno, Jean F. Smith, and Robert V. Smith 466
Separation of *Crotalus atrox* (Western Diamondback Rattlesnake) α-Proteinase from Serine Proteinase and Hemorrhagic Factor Activities
Marian Kruzel and Lawrence F. Kress 471
Mg^{2+}-Dependent Phosphatidate Phosphohydrolase of Rat Lung: Development of an

Assay Employing a Defined Chemical Substrate Which Reflects the Phosphohydrolase Activity Measured Using Membrane-Bound Substrate
Paul A. Walton and Fred Possmayer 479

Difference Spectroscopy with Respiratory Membranes of an H_2-Oxidizing Microorganism Layered between Two Gas-Permeable, Plastic Foils: A Procedure that Allows Measurements in the Ultraviolet Range *Hans-Georg Podzuweit and Daniel J. Arp* 487

Simultaneous Determination of Glucose Turnover, Alanine Turnover, and Gluconeogenesis in Human Using a Double Stable-Isotope-Labeled Tracer Infusion and Gas Chromatography–Mass Spectrometry Analysis
A. Martineau, L. Lecavalier, P. Falardeau, and J. L. Chiasson 495

Enzymatic Method for Continuous Monitoring of Inorganic Pyrophosphate Synthesis
Pål Nyrén and Arne Lundin 504

An Enzymatic Estimation of Free Hydroxypyroline in Tissue Hydrolysates
Akira Ito, Hiroshi Uoji, and Yo Mori 510

Two-Step Purification of Tryptophan-Accepting tRNA from *Bacillus stearothermophilus*
Charles W. Carter, Jr., David C. Green, Claudia S. Toomim, and Laurie Betts 515

Modification of Serine Residues during Sequential Degradation of Proteins and Peptides by the Phenylisothiocyanate Method *Manfred Pavlík and Vladimír Kostka* 520

Isolation of Specific tRNAs Using an Ionic–Hydrophobic Mixed-Mode Chromatographic Matrix *Rainer Bischoff and Larry W. McLaughlin* 526

New Fluorogenic Substrate for Esterase Activity of α-Chymotrypsin and Related Enzymes
Kenji Kuromizu, Yukiko Shimokawa, Okitoshi Abe, and Nobuo Izumiya 534

Application of a Modified Computer Algorithm in Determining Potential Antigenic Determinants Associated with the AIDS Virus Glycoprotein
Daniel Pauletti, Robin Simmonds, Gordon R. Dreesman, and Ronald C. Kennedy 540

Improved Enzyme Screening by Automated Fast Protein Liquid Chromatography
Horst Schütte, Werner Hummel, and Maria-Regina Kula 547

Separation of Partially Methylated Mannitols by Liquid Chromatography
Steven R. Hull and Salvatore J. Turco 554

A Procedure for the Purification of Ferritin from Human Liver by Heating a Methanol-Treated Homogenate *B. E. Cham, H. P. Roeser, A. Nikles, and K. Ridgway* 561

Determination of Chloride Procedure Based upon Diffusion of Hydrogen Chloride
Florian L. Cerklewski and Nathan D. Bills 566

Determination of Sepharose-Bound Protein with Coomassie Brilliant Blue G-250
R. A. Asryants, I. V. Duszenkova, and N. K. Nagradova 571

BOOK REVIEW

Methods in Enzymology, Vol. 112, Part A, *Drug and Enzyme Targeting,* Edited by K. J. Widder and R. Green Reviewed by *John K. Baker* 575

ERRATUM

Volume 150, Number 1, October, 1985: Hiroyuki Hirano, Takao Nishimura, and Tatsuichi Iwamura, "High-Flow-Rate Hydroxylapatites," pp. 228–234 576

AUTHOR INDEX FOR VOLUME 151 577
CUMULATIVE AUTHOR INDEX FOR VOLUMES 144–151 579
CUMULATIVE SUBJECT INDEX FOR VOLUMES 144–151 590